

ARC DETECT™

ARCNET® Network Analyzer

Benefits

- Low cost network analyzer
- Simple to use and understand
- Rugged compact handheld design
- ARCNET compatible
- Extensive diagnostic capability
- Easy to read backlit LCD display
- Optional remote PC display
- Directly supports coaxial star or coaxial bus cabling
- Carrying case for convenient storage
- Transparent operation to the network under test
- Ideal for field troubleshooting

Applications

- Plant floor troubleshooting
- Desktop network analysis
- Product development
- Network management



Analyzing ARCNET networks is simplified with the ARC DETECT network analyzer.

Description

The ARC DETECT offers sophisticated ARCNET network analysis in a compact, handheld unit and is a valuable tool in maintaining an ARCNET LAN. The operator can determine which devices are connected to the network, the content of messages being sent, who caused a reconfiguration, and network performance. Using a backlit LCD display, the operator can scroll through the analyzer's data buffer in order to study network traffic.

ARC DETECT consists of a handheld terminal with a 40 key membrane keyboard along with a 4 line by 20 character LCD display. A microprocessor and ARCNET communications controller are dedicated to capturing and storing the ARCNET traffic present on the network. Power is derived from a wall-mounted UL approved transformer. ARC DETECT is available in two models. The first model is for star networks which include active or passive hubs. The second model is directed towards bus or hubless systems although

connection to an active hub is also possible.

ARC DETECT is transparent to the network under test since it never joins the network (never participates in the token pass) yet it can examine all other nodes on the network. Since it can examine all nodes, complete traffic on the network can be analyzed including the content of packets. Using a unique filter option, only selected messages can be acquired allowing the operator to key on a particular event of significance. Because ARC DETECT is a real-time device, token rotation time can be displayed and other events can be time stamped as they occur.

An optional Windows-based PC program ARCDTECT-PC allows the ARC DETECT network analyzer to communicate to a Windows-based PC via the COM 1 port on the PC and the built-in serial port on the ARC DETECT. Network traffic can then be displayed on a larger, more colorful monitor.

Ten Diagnostic Functions

HELP

ARC DETECT offers the operator an on-line help mode for each of the function keys. Simply depressing the "help" key, followed by the desired function key, will yield information about that function to be displayed on the screen. Help can be accessed at any time.

NET MAP - Network Map

All active node addresses on the network are displayed. An active node is one that participates in the token pass. Nodes that are added to the network are identified with a (+) sign beside the address. Similarly, as a node leaves the network a (-) sign is appended to the address. Nodes that leave and enter networks may be the result of communication problems that degrade system performance. These problems are extremely difficult to detect but, ARC DETECT provides the clue.

RECON - Reconfiguration

A reconfiguration occurs when a node enters a network by first generating a reconfiguration burst that disrupts the normal token passing sequence. Although an inherent feature of ARCNET, excessive reconfigurations could be a result of a marginal network. ARC DETECT counts reconfigurations and displays the changes in the network map after a reconfiguration occurs.

TOKEN TIME - Token Rotation Time

The time it takes for any one node to pass the token and receive it again is called the token rotation time. ARC DETECT determines the actual token time and displays the result continuously. The maximum token rotation time is also displayed thereby indicating the worst-case response of the network. Token rotation time is an indication of the realtime performance of the network.

LOAD FACTOR - Network Performance

Network performance can be measured using three parameters:

packets/sec, bytes/sec and bits/sec. All three are displayed dynamically with the maximum amount stored and displayed along with the current value.

PACKET ASCII - Packets Displayed in ASCII

The contents of the acquired packets are displayed in ASCII format. ASCII control characters that cannot be displayed are represented by a (.). Displayed with the data are the source node address, destination node address, and packet size in either hexadecimal or decimal form depending upon the HEX/DEC selection.

PACKET HEX - Packets Displayed in Hexadecimal

The contents of the acquired packets are displayed in hexadecimal format. Also displayed with the data are the source node address, destination node address, and packet size in either hexadecimal or decimal form depending upon the HEX/DEC selection.

PACKET COUNT - Packet Count

ARC DETECT counts the number of packets transmitted or received by each node. Messages are comprised of packets and by knowing the amount of packets sent, the operator can determine which nodes are creating the most network traffic.

PACKET SIZE - Packet Size

ARCNET allows for variable length packets and ARC DETECT records the minimum and maximum length packets sent from each node. This information is handy in determining if network traffic is occurring as expected. The average length packet is displayed as an indication of throughput.

SET FILTER - Set Capture Parameters

In order to avoid the acquisition of superfluous data, data can be filtered based upon capture parameters selected by the operator. When this mode is selected, various parameters are displayed with an "XXX" designation alongside. By changing

the designations to desired values, only that data that corresponds to the designated parameters will be acquired. A particular parameter is ignored if the designation field is left as an "XXX." Parameters that can be assigned and their ranges are as follows:

Parameters	Symbol	Range
Source node address	SID	1-255
Destination node address	DID	0-255
Packet size	CNT	1-508
Buffer offset	BUFOFF	1-508
Data	VALUE	00-FF (hex)

Parameter values can be entered in either hexadecimal or decimal form depending upon the mode selected.

For example, to view all broadcast messages, set the DID to 0 and only broadcast messages will be captured. By setting the SID to 255 and DID to 0, only those broadcast messages from node 255 (decimal) will be captured. Other capture constraints are possible using this very flexible format.

F1, F2, F3 - User Functions

Three function keys have been reserved for future features or for special tests. Contact factory with any special requirements.

Five Indicators

There are five LED indicators that depict ARC DETECT's modes of operation.

MODE - located above SNAP Shot

Indicates that a single event acquisition is taking place.

MODE - located above CONT UPDATE

Indicates that the unit is continuously acquiring data.

BASE - located above HEX/DEC

Indicates that ARC DETECT is in hexadecimal mode.

TIME - located above ABS/DELTA

Indicates that the absolute mode has been selected.

ERROR - located above CONFIG/SETUP

Indicates an error has occurred.

Five Modes of Operation

SNAP SHOT - Single Event

When this mode is selected, ARC DETECT immediately acquires data for the function selected. Once the data changes for any reason, acquisition stops; however, the display will indicate the changed data. This mode is useful when the operator desires to capture a single event. Depressing the mode button again results in another event being captured. This mode is applicable to PACKET ASCII, PACKET HEX, NET MAP and RECON functions.

CONT UPDATE - Continuous Update

In this mode, data is continuously acquired until this mode is exited. This is the normal operating mode where the display is continuously updated with the acquired data. Depressing this mode button suspends acquisition so that the operator can analyze the readings. Depressing the mode button again resumes acquisition.

HEX/DEC - Number Conversion - Hexadecimal/Decimal

Node addresses and set filter parameters can be displayed in either decimal or hexadecimal form. Each representation can be alternated by simply toggling this mode key.

ABS/DELTA - Absolute or Relative Time Stamp

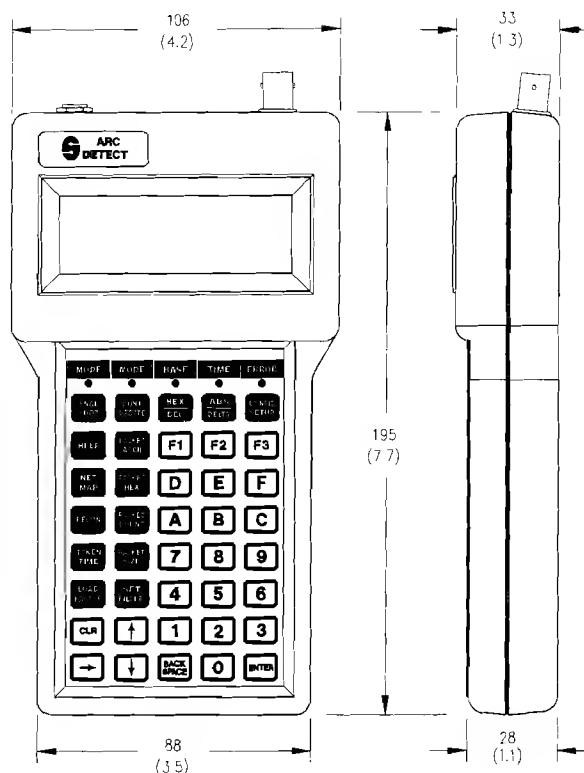
When packets are being monitored, their reception is time stamped relative to the beginning of acquisition. This is called the absolute (ABS) mode. If it is desired to display the time between packets, the relative (DELTA) mode is

selected. Each representation is displayed by simply toggling this mode key.

CONFIG SETUP - Configuration and Setup

Depressing the configuration key allows the operator to view ARC

DETECT's current configuration. Newer ARCNET technology allows for variable network speeds and ARC DETECT can be configured for different baud rates. Available baud rates are 2.5 Mbps, 1.25 Mbps, 625 Kbps, 312.5 Kbps, and 156.25 Kbps.



Connecting ARC DETECT to a Network

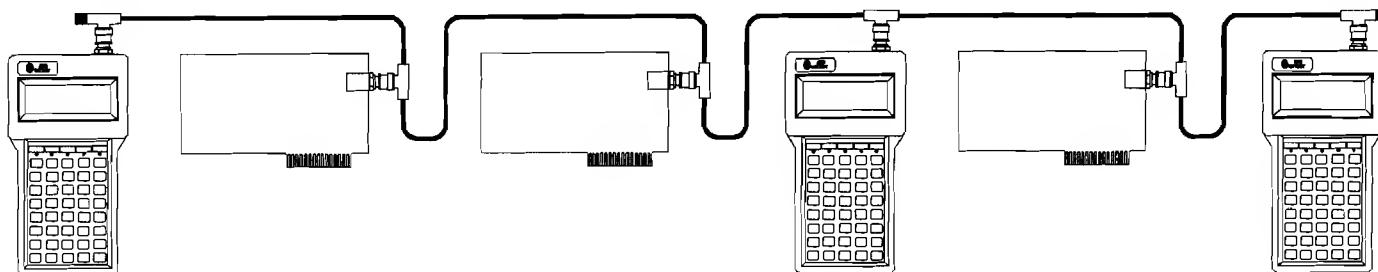
ARC DETECT is available in two models: ARCADETECT-CXS and ARCADETECT-CXB. The -CXS version is for coaxial star applications where field connections are made to an unused port on either a passive or active hub. Simply connect the 10' coaxial cable (included with the unit) to a port on the hub. On passive hubs remove the terminator attached to the unused port before connecting ARCADETECT-CXS.

The -CXB version is primarily intended for hubless systems, although it can function with active hubs. Connect a BNC "T" connector and terminator (included with the unit) to the top of the ARC DETECT. Remove the terminator at one end of the bus segment and connect a 10' coaxial cable between the ARC DETECT and the port where the

terminator was removed. ARC DETECT can also be inserted in the middle of a bus segment but without the terminator. The -CXB version can still be used with an active hub. Using the BNC "T" connector and terminator, connect the 10' coaxial cable to an unused coaxial port on the hub. The -CXB version is not recommended for use with passive hubs.

Active hubs such as CCSI's MOD HUB and MODHUBplus are required for monitoring networks with either twisted-pair, long-haul twisted-pair, fiber optic or broadband segments. Simply connect either an ARCADETECT-CXS or ARCADETECT-CXB to an unused coaxial baseband port following the rules stated above.

Connection Diagram



For hubless systems, connect the ARCDTECT-CXB to either end of the bus segment along with a terminator. No terminator is used for connection within the segment.

Specifications

Carrying Case

Functional: Charcoal gray textured case with latches, handle, and inside foam protection

Material: High density polyethylene

Dimensions: 4"H x 15.5"W x 13.31"D

Shipping Carton

Dimensions: 4 1/2"H x 15.75"W x 14.25"D

Shipping Weight: 6 lbs.

Power Supply

Functional: Wall-mount plug-in, 2 prong

Dimensions: 2.95"H x 2.72"W x 1.93"D

Material: Impact resistant black thermoplastic

Electrical: Input 105-129 VAC 60Hz 0.15A
Output +5VDC 0.5A

Cord: 7' long with molded plug

Temperature: 0-40°C operating

Agency Approval: UL

Handheld Unit

Material: Case is ABS. Plastic display window and keypad overlay are a polyester-polycarbonate blend.

Keypad: 40 key embossed legend over steel snap dome

Display: 4 line x 20 characters backlit supertwist LCD

Case color: Grayhound 3501

Connectors: ARCNET via BNC (-CXB model has a white BNC housing; -CXS model has a metal BNC housing)
Power via Switchcraft #712A jack
Serial port via RJ-11

Agency Approval: FCC Part 15 Class A

Ordering Information

Included with the ARC DETECT are a wall-mount power supply, 10' RG-62/u coaxial cable, BNC "T" connector and 93 ohm terminator. Included with the ARCDTECT-CXS are the 10' coaxial cable and power supply. Included with the ARCDTECT-PC, which is distributed on a 3.5" diskette, is a 10' long serial port cable. Order by the following numbers:

Model	Description
ARCDTECT-CXS	ARCNET NETWORK ANALYZER-COAX STAR
ARCDTECT-CXB	ARCNET NETWORK ANALYZER-COAX BUS
ARCDTECT-PC	ARCNET NETWORK ANALYZER SOFTWARE
ARCDTECT-HOL	WALL-MOUNTED HOLSTER

**Contemporary
Control Systems, Inc.**

2512 Wisconsin Avenue • Downers Grove, Illinois 60515 • USA
TEL 708.963.7070 FAX 708.963.0109



ARCNET is a registered trademark of Datapoint Corporation. ARC Control and ARC DETECT are trademarks of Contemporary Control Systems, Inc. Other product names may be trademarks or registered trademarks of their respective companies. Specifications are subject to change without notice. © Copyright Contemporary Control Systems, Inc. April 1994 TD876000-0DA